AMENDMENTS TO THE CLAIMS

This listing of claims replaces all prior versions, and listings, of claims in the application:

Listing of the Claims:

Claims 1-10 (**Canceled**)

11. (**Canceled**)

12. (**Currently amended**) The method according to claim [[11]] 25, wherein the step of analyzing the output waveform includes utilizing chronocoulometry.

13. (**Currently amended**) The method according to claim [[11]] 25, wherein the step of analyzing the output waveform for presence of the characteristic waveform includes applying the output waveform to a digital lock-in amplifier.

14. (**Withdrawn/ Currently amended**) The method according to claim [[11]] 25, wherein the step of analyzing the output waveform for presence of the characteristic waveform includes fitting the output waveform to the characteristic waveform.

15. (**Withdrawn/ Previously presented**) The method according to claim 14, wherein the step of fitting the output waveform to the characteristic waveform includes calculating an error between the characteristic waveform and the output waveform.

16. (**Withdrawn/ Currently amended**) The method according to claim [[11]] 25, wherein the step of analyzing the output waveform for presence of the characteristic waveform includes determining a background signal and subtracting the background signal from the output waveform.

17. (**Currently amended**) The method according to claim [[11]] 25 wherein the electron transfer moiety comprises a transition metal complex.

18. (**Currently amended**) The method according to claim [[11]] 25 wherein the target analyte comprises a nucleic acid.

19. (**Withdrawn/ Currently amended**) The method according to claim [[11]] 25 wherein the target analyte comprises a protein.

20. (**Currently amended**) The method according to claim [[11]] 25 wherein the input waveform comprises at least a portion having a frequency of about 100 kHz.

21. (**Currently amended**) The method according to claim [[11]] 25 wherein the input waveform is a voltage waveform and the output waveform is a current waveform.

22. (**Currently amended**) The method according to claim [[11]] 25 wherein the characteristic waveform comprises a Gaussian waveform.

23. (**Currently amended**) The method according to claim [[11]] 25 wherein the characteristic waveform comprises a modified Gaussian waveform.

24. (**Currently amended**) The method according to claim [[11]] 25 further comprising predicting the characteristic waveform, based at least on the electron transfer moiety.

25. (**Currently amended**) A method for detecting the presence of target analytes, the method comprising:

   providing an electrode comprising a self-assembled monolayer and an assay complex covalently attached to the electrode, the assay complex comprising a target analyte, a capture binding ligand and an electron transfer moiety (ETM), wherein in the absence of said target analyte, said ETM is not present;

   applying an input waveform to the electrode;

   receiving an output waveform that is ~~unique to target analyte signals from the electrode, responsive to the input waveform~~ characteristic of the presence of said ETM;

   analyzing the output waveform ~~using chronocoulometry~~ to identify electron transfer

between the electron transfer moiety and the electrode as an indication of the presence of said target analytes wherein the analyzing step comprises peak recognition.